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A new species of *Coelogyne* section *Longifoliae* (*Orchidaceae* : *Coelogyneae* : *Coelogyninae*) from Borneo

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Summary. *Coelogyne motleyi*, first collected in the 1850's, is described from Kalimantan Timur. It is distinguished from *C. cuprea* var. *cuprea* primarily by the synanthous inflorescence.

The genus *Coelogyne* is represented by approximately sixty named species and several subspecies and varieties in Borneo. Further taxa still remain to be described, however, particularly in sections *Longifoliae* and *Rigidiformes*. The species belonging to section *Longifoliae*, described here, was first collected by James Motley in South Kalimantan in the 1850's and is also known from a handful of mostly recent collections from East Kalimantan, Sabah and Sarawak.

Motley's collection was incorporated into the Hooker herbarium at Kew in 1867. R.A. Rolfe, the first eminent Kew orchidologist, had evidently examined the plant subsequently and proposed the name *C. motleyi*. Although the name was never formerly published, his successor, V.S. Summerhayes, had placed the sheet in a type folder and annotated the species cover "*motleyi* Rolfe". The annotation "*motleyi*" also appears on the sheet itself written in the hand of L.A. Garay, former curator of the Orchid Herbarium of Oakes Ames, Harvard University (AMES). The flowers contained within a capsule on the sheet are incomplete, the lip, in particular, being damaged.

In the Leiden herbarium (L) there is an unpublished floral sketch by J.J. Smith prepared from a collection made in Sarawak by Joseph & Mary Strong Clemens (no. 20720). This sketch is annotated "*Coelogyne cuprea* Wendl. et Krzl. (?) n.sp. *borneensis* J.J.Sm. vel (?)" by Smith and is clearly referable to *C. motleyi*. The question marks in brackets indicate words that are indecipherable.

The collections now referable to *C. motleyi* have, in the past, been variously determined as *C. aff. cuprea* Wendl. & Kraenzl. var. *cuprea*, *C. cuprea* Wendl. & Kraenzl. var. *planiscapa* J.J. Wood & C.L. Chan, *C. dulitensis* Carr, *C. planiscapa* Carr var. *planiscapa* and *C. planiscapa* Carr var. *grandis* Carr. This group of taxa in the *C. cuprea* alliance all have rather similar flowers and are very difficult to determine without accompanying pseudobulbs, leaves or peduncle. Some, for example, have a distinctive, flattened peduncle (*C. cuprea* var. *planiscapa*, *C. planiscapa* var. *planiscapa* and var. *grandis*).

C. motleyi is most closely allied to *C. cuprea* var. *cuprea* from Sumatra and Borneo, but is distinguished by its distinctive synanthous inflorescence. This develops simultaneously with the pseudobulb and leaves. The slender, pendulous rachis bears up to only three flowers which are pale olive-ochre with brown crests along the keels of the lip. The side lobes of the lip are semi-orbicular and the mid-lobe is narrowly ovate with a thickened, fleshy margin characteristic of several taxa in this group. The two elevate, lateral keels extend from the base of the lip to the lower half of the mid-lobe, while the median is less pronounced and terminates at its base.

A preliminary artificial key to the taxa in the *Coelogyne cuprea* alliance of section *Longifoliae* in Borneo is given below:

1. Inflorescence synanthous, i.e., developing simultaneously with pseudobulb and leaves 2
   Inflorescence hysteranthous, i.e., developing after pseudobulb and leaves have matured 4

2. Inflorescence peduncle slightly flattened to flattened; rachis many-flowered 3
   Inflorescence peduncle terete, to 17 cm long; rachis slender, few-flowered. Pseudobulbs cylindric, to 7 cm long. Leaves lanceolate. Mid-lobe of lip triangular, margins fleshy, recurved, 3 keels extending from base of lip, median keel terminating at base of mid-lobe, lateral keels extending towards middle of mid-lobe. Flowers olive-ochre, keel crests brown ..... **C. motleyi** sp. nov.

3. Pseudobulbs cylindric to fusiform, to 16 cm long. Inflorescence peduncle slightly flattened, 13–21 cm long; rachis zig-zag, 10 cm long, many-flowered. Mid-lobe of lip rounded, reflexed, apex fleshy, 2-keeled, wing-shaped, terminating at middle of mid-lobe. Sepals and petals light brown to white, lip white with brown nerves .... **C. endertii** J.J. Sm.

Pseudobulbs ovoid to oblong-ovoid, 9.5 cm long. Inflorescence peduncle flattened, 20 cm long; rachis slender, 35- to 50-flowered. Mid-lobe of lip oblong-elliptic, apiculate, with papillae on mid-lobe, 3 simple keels, median keel terminating at base of mid-lobe, lateral keels continuing to middle of mid-lobe. Flowers salmon-pink, keel crests yellowish-brown ..... **C. tenompokensis** Carr

4. Pseudobulbs exceeding 5.0 cm long 5
Pseudobulbs 3.5 cm long, pyriform. Inflorescence peduncle compressed, 16 cm long; rachis many-flowered. Mid-lobe of lip clawed, orbicular, margins undulate, 2 simple, straight, entire keels terminating at middle of mid-lobe. Flowers light chocolate-brown, with white nerves ..... **C. borneensis** Rolfe

5. Leaves oblong-lanceolate or linear-oblong 6
Leaves obovate, ovate, ovate-elliptic or elliptic 7

6. Pseudobulbs fusiform to narrowly cylindric, 6.5 cm long. Inflorescence peduncle flattened, 20.5 cm long, narrowly winged; rachis zig-zag, many-flowered. Lip indistinctly 3-lobed, mid-lobe clawed, orbicular, margins undulate, keels not very evident, median nerve thickened and merging with thickened lateral keels on mid-lobe. Sepals and petals olive-yellow, lip salmon-pink ..... **C. compressicaulis** Ames & Schweinf.
Pseudobulbs elongate ovate, exceeding 8 cm long. Inflorescence peduncle slightly flattened, 5–12 cm long; rachis 5–30 cm long, 10- to 40-flowered. Mid-lobe of lip clawed, ovate, margins thickened, wrinkled, 3 entire keels, median keel terminating halfway to base of mid-lobe, lateral keels extending to base of mid-lobe. Flowers pale pink ..... **C. dulitensis** Carr

7. Pseudobulbs ovoid to elongate-ovoid 8
Pseudobulbs cylindrical to fusiform or pyriform 9

8. Pseudobulbs ovoid, to 7 cm long. Inflorescence peduncle strongly flattened, winged, 17 cm long; rachis zig-zag, 24 cm long, many-flowered. Mid-lobe of lip clawed, ovate, margins thickened, wrinkled, 3 entire keels extending from base of lip, median keel terminating one third the way on hypochile, lateral keels terminating at middle of mid-lobe. Flowers shell-pink, keels pink ..... **C. planiscapa** Carr **var. planiscapa**
Pseudobulbs elongate-ovoid, 13 cm long. Inflorescence peduncle strongly flattened, narrowly winged, 30 cm long; rachis zig-zag, 24 cm long, many-flowered. Mid-lobe of lip clawed, ovate, margin thickened, wrinkled, 3 entire keels extending from base of lip, median keel terminating one third the way on hypochile, lateral keels terminating at middle of mid-lobe, 2 extra keels near margin at base of mid-lobe. Flowers salmon-pink flushed orange, lip deep salmon-pink ..... **C. planiscapa var. grandis** Carr

9. Pseudobulbs 20–28 cm long. Inflorescence peduncle erect, 8–11 cm long; rachis zig-zag, 8–14 cm long, around 36-flowered. Mid-lobe of lip ovate-lanceolate, 3 keels, median

keel very short, lateral keels thin and flat. Sepals pale flesh-coloured with yellowish-green keel, petals pale yellowish, lip pale rose, keels light ochre .... **C. kinabaluensis** Ames & Schweinf.

Pseudobulbs 5–20 cm long. Not this combination of characters 10

10. Inflorescence peduncle terete, 7.5–13 cm long; rachis thickened, stiff, not zig-zag, with prominent internodes, 17- to 24-flowered. Mid-lobe of lip orbicular, margins crenulate, 3 plate-like keels, median keel less so, terminating on mid-lobe. Dorsal sepal 2.5–3 cm long. Flowers copper to salmon-brown, lip with darker nerves and keels .... **C. cuprea** H. Wendl. & Kranenzl. **var. cuprea**

Inflorescence peduncle flattened; rachis zig-zag, up to 50 cm long, many-flowered. Mid-lobe of lip ovate-elliptic, margins crenulate. Dorsal sepal 3.5-4 cm long. Sepals and petals pale translucent salmon-pink, lip darker salmon-pink .... **C. cuprea var. planiscapa** J.J. Wood & C.L. Chan

Coelogyne motleyi *Rolfe ex J.J. Wood, D.A. Clayton & C.L. Chan,* **sp. nov.** *Sectionis Longifoliarum C. cupreae var. cupreae arcte affinis sed inflorescentia synantha rhachidi gracili pendenti pauciflora floribus pallide olivaceo-ochraceis carinis brunneo-cristatis in labello insidentibus lobis lateralibus labelli semi-orbicularibus lobo medio labelli triangulari carina mediana longiore e basi labelli ad basin lobi medii extendenti atque carinis lateralibus ad dimidium primum lobi medii extendentibus distinguitur. Typus: Indonesia, Kalimantan Timur, near Balikpapan, alt. 50–200 m, 1981, Franken & Roos s.n., cult. Hortus Botanicus, Leiden, The Netherlands, cult. no. 20858 (holotypus: L, alcohol material only).*

Medium-sized terrestrial (also epiphytic?) herb. *Roots* appearing from the rhizome, numerous, branching, minutely papillose, up to *c.* 15 cm long, 0.2 cm in diameter. *Rhizome* creeping, up to 15 (probably more) cm long, 0.5 –0.6 cm in diameter, internodes 0.8–2.5 cm long. *Rhizome cataphylls* ovate, obtuse and apiculate, acute or acuminate, sheathing, 1–1.8 cm long, gradually becoming fibrous and disintegrating. *Cataphylls subtending pseudobulbs and leaves* (3–)4, ovate to triangular-ovate, acute to acuminate, 1–7 cm long. *Pseudobulbs* cylindrical or fusiform, obtusely 4-angled, smooth, bifoliate, (3–)5–7 × 1–1.5 cm, borne 0.8–2.5 cm apart. *Leaves* petiolate; petiole conduplicate, (1–)2–3.5(–5) cm; mature blade narrowly elliptic, acute to shortly acuminate, thin-textured, coriaceous, (12–)20–24.5 × (1.4–)2.5–3 cm, main nerves 5, 3 remaining prominent in dried material. *Inflorescence* synanthous, erect to gently curving, 2- to 3-flowered; peduncle terete, naked, 8–17 cm long; rachis slender, fractiflex, 3–6.5 cm long; floral bracts narrowly elliptic or ovate-elliptic, subobtuse to acute, deciduous, 2.5–4 cm long. *Flowers* appearing not to open widely, pale olive-ochre, keels on labellum with a brown crest, anther-cap yellow with brown along margins. *Pedicel* and *ovary* clavate, curved, 6-keeled, keels undulate, 1.5 cm long. *Dorsal sepal* ovate-elliptic, obtuse to subacute, concave, 8- to 10-nerved, 2.6–2.7 × (0.8–)1 cm. *Lateral sepals* narrowly oblong-elliptic, slightly oblique, acute, concave distally, sigmoid, 7-nerved, 2.5–2.6 × 0.8 cm. *Petals* linear, obtuse, 3-nerved, 2.5–2.6 × 0.12–0.19 cm. *Labellum* 3-lobed, gently curved, concave at base, 2.2–2.3 cm long, 1.6 cm wide across side lobes; side lobes erect, semi-orbicular, rounded, margin

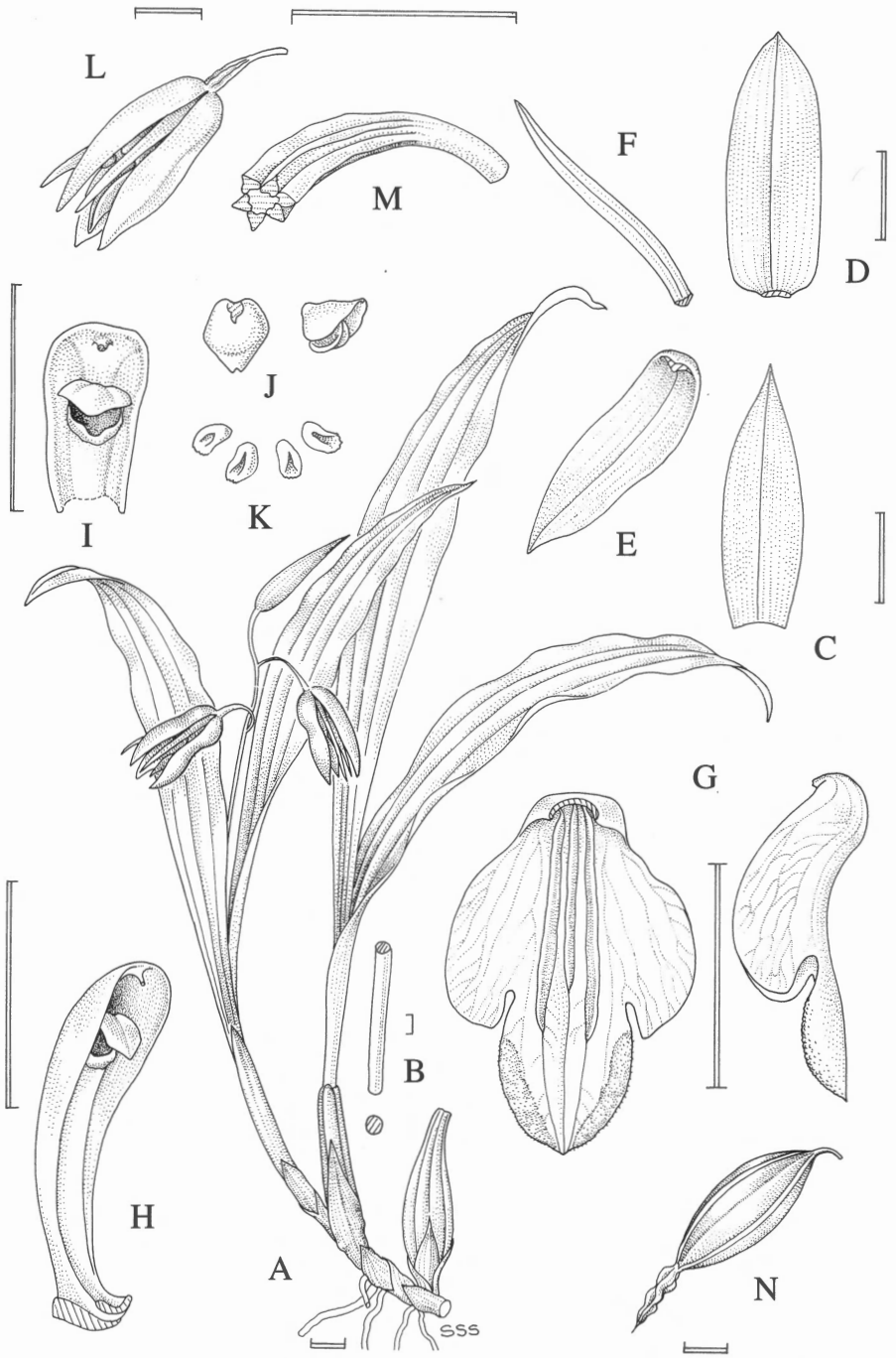

Fig. 1. *Coelogyne motleyi*. **A**, habit. **B**, peduncle, with transverse section. **C**, floral bract. **D**, dorsal sepal. **E**, lateral sepal. **F**, petal. **G**, lip, front view, flattened, and side view. **H**, column, oblique view. **I**, column apex showing anther-cap. **J**, anther-cap, back and side views. **K**, pollinia. **L**, flower, side view. **M**, pedicel and ovary, with transverse section through ovary. **N**, fruit. **A–K** from *Franken & Roos* s.n., cult. Hortus Botanicus, Leiden, cult. no. 20858 (holotype); **L** & **M** from *Franken & Roos* s.n., cult. Hortus Botanicus, Leiden, cult. no. 21094; **N** from *Moulton* s.n. Scale: single bar = 1 mm; double bar = 1 cm. Drawn by Susanna Stuart-Smith.

Fig. 2. *Coelogyne motleyi* n. sp. cultivated at the Poring Orchid Centre, Kinabalu Park. (Photo: C.L. Chan)

entire, thin-textured, nervose, 1.2–1.3 cm long, *c.* 0.5 cm tall; mid-lobe narrowly ovate, obtuse, apiculate, margin thickened, fleshy and uneven, 1.1–1.2 × 0.8–0.85 cm; keels 3, elevate, running along the 3 central nerves, extending from base, lateral terminating on proximal portion of mid-lobe, median terminating at base of mid-lobe; main nerves 8. *Column* slightly curved, truncate, wings entire, 1.7–1.8 cm long; rostellum broadly ovate, obtuse; anther-cap ovate, cucullate, apex retuse, 3.7–3.8 × *c.* 3.4 mm. (Figs. 1–3)

OTHER SPECIMENS EXAMINED—BORNEO. SABAH: Keningau to Sepulot road, 6 km past Nabawan, near old airstrip, 116°27'E 5°02'N, alt. *c.* 400 m, August 1986, *Vermeulen & Lohok* 403 (K, L). **SARAWAK:** Bau District, Bidi Cave, 19 October 1929, *J. & M.S. Clemens* 20720 (K, L). Sarawak: Lawas District, Ulu Lawas, August 1909, *Moulton* s.n. (K). Locality unknown, *native collector* (Sarawak Museum) 597, 627 & 895 (all AMES, K, PNH). **KALIMANTAN:** Kalimantan Selatan: Banjarmasin (Bangarmassing), 1857–58, received 1859, *Motley* 851 (322?) (K). 'BORNEO'. *Rothschild* 540, cult. RBG Kew accession no. 651–13, flowered August 1915 (K).

ADDITIONAL MATERIAL IN ALCOHOL: KALIMANTAN: Kalimantan Timur, near Balikpapan, alt. 50–200 m, 1981, *Franken & Roos* s.n., cult. Hortus Botanicus, Leiden, The Netherlands, cult. no. 20857 (L) & 21094 (K, L).

Fig. 3. Close-up of a flower of *Coelogyne motleyi* n. sp. (Photo: C.L. Chan)

HABITAT: Lowland mixed dipterocarp forest; podzolic dipterocarp/*Dacrydium* forest on very wet sandy soil; rocky forest.

The specific epithet honours James Motley, a British civil engineer who was appointed superintendent of the coal mining operations of a private company in the territory of the Sultan of 'Bandjermasin' (now Banjarmasin). He was an amateur naturalist who collected and cultivated orchids in Borneo. He was murdered by natives at Bangkal near Banjarmasin in 1859 only a short time after making the earliest known collections of this *Coelogyne*.

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REFERENCES

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